MANAV RACHNA INTERNATIONAL INSTITUTE OF RESEARCH AND STUDIES

(Deemed to be University under section 3 of the UGC Act, 1956)

Centre for Distance and Online Education

CURRICULUM AND SCHEME OF EXAMINATION

Three-Year Programme

B.A. Economics (Honours)
(ONLINE DEGREE PROGRAMME) AS PER NEP 2020
B.A. Economics (Honours)

Batch: 2024-2027 AND ONWARDS

Preamble

The Centre for Distance and Online Education has adopted relevance to the local, national, regional and global developmental needs with well-defined Program Educational Objectives (PEOs), Program Outcomes (POs) and Program Specific Outcomes (PSOs) at the program level and Course Outcomes (COs) at the individual course level.

The unique and vibrant curriculum of undergraduate, postgraduate, and doctoral programs offered by the Department of Economics is committed to a liberal education philosophy and promotes quality teaching and research on contemporary demand. The department's vision is to attain the standard of excellence by imparting knowledge in fundamental areas and pushing research frontiers to address emerging global challenges through the holistic development of students into ethical and socially responsible competent economists. The mission of the department is to offer a curriculum which prepares students to acquire theoretical knowledge and applied skills to deal with economic enquiries, engage students in research on economic and public-policy issues for attaining development in a sustainable manner, and to impart holistic education by producing socially responsible and internationally competitive economists.

The Economics PEOs and POs aim to create globally competent economists by extending frontiers to meet current and future needs and introducing research to address the economic challenges to build up a sustainably developed world. It will help inculcate national ethos and values to the ignited minds for serving the community on economic or policy issues. The curriculum will enable students to apply an analytical framework for economic enquiry and decision-making by appropriate consideration of social and environmental welfare at local, regional, national and global levels. The curriculum is regularly reviewed for revisions or new courses that will help address the needs of academics, industry and society. Regular feedback on the curriculum is taken from all stakeholders, i.e., students, parents, faculty, and industry experts. The curriculum is benchmarked with reputed national and international institutions/Universities.

The robust curriculum aims to narrow the gap between academics and industry to increase employment opportunities and simultaneously push the frontiers of research to meet the local, regional, national and global demand for new forms of knowledge. The research cell “Center for Economic Policy Studies” of the Department of Economics is an initiative in this direction. The growing need for trained economists in Faridabad, being an industrial hub and Delhi NCR, is being met by the young and dynamic students of the Department of Economics who have professional competencies and in-depth domain-centric theoretical and applied knowledge. The content of the curriculum, as well as the teaching-learning process, is therefore planned and implemented to meet both local and regional demand for education.

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MANAV RACHNA INTERNATIONAL INSTITUTE OF RESEARCH AND STUDIES

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VISION

Attain the standard of excellence by imparting knowledge in fundamental areas and pushing research frontiers to address emerging global challenges through the holistic development of students into ethical and socially responsible competent economists.

MISSION

1. Prepare students for acquiring theoretical knowledge and applied skills to deal with economic enquiries.
2. Research economic and public-policy issues for sustainably attaining development.
3. Impart holistic education by producing socially responsible and internationally competitive economists.

ABOUT THE DEPARTMENT

The ultimate touchstone of quality education is the quality culture permeating in any education Institution. In today's world of digitization, technical education stands at the crossroads of keeping pace with the emerging needs of humankind along with fast changing trends in governance and scientific development. The global transformation, trend of learning by doing, relevance to people and nation development – Manav Rachna International Institute of Research and Studies is the right place to gear up with a world class competitive edge. We are trusted to nurture juvenile minds and prepare them to deal with challenges of their future endeavors. Continuing the Legacy of our Founder Dr. O.P Bhalla, Manav Rachna has launched "Manav Rachna Centre for Distance and Online Education" to provide quality programmes to those students who are not able to draw benefits from conventional systems of Education. Seven programmes in different streams namely Computer Applications, Management, Commerce, Business Administration and Economics will be offered by university in online mode with specialization in different domains. In Today's opportunistic world specialized education is essential for successful professional life.
Manav Rachna Centre for Distance and Online Education has collaboration with prominent industry partners to provide global career opportunities to the students and prepare the students to acquire the increased technology intensive needs of today.

In addition, Manav Rachna Centre for Distance and Online Education provides a multidisciplinary approach for the students to shape their career inside and outside their domain of education and to meet the evolving needs of the society. The commitment of multidisciplinary education is to broaden the participation of students in higher education and leads to a more diverse community. In a multidisciplinary approach, students are inspired to select diverged courses from different disciplines to expand their knowledge, discover themselves through creative thinking and learn the skills of collaboration. The online programmes will help the students to achieve an academic degree along with flexibility and relaxation. These online programs hold equal academic value to as on- campus degree and help students in developing themselves into an industry ready as equivalent to a conventional degree. Students can perfectly reshape their career and future through impeccably designed online programmes. The renowned faculty, cutting – edge advanced curriculum, technology driven and a remarkable content delivery will be helpful in the successfully implementation of online programs.

A. PROGRAM EDUCATIONAL OBEJCTIVES (PEO'S)

PEO-1: Create globally competent economists by extending frontiers to meet current and future needs.
PEO-2: Introduce research addressing the economic challenges to build a sustainably developed world.
PEO-3: Pursue lifelong learning to prepare students holistically for various careers as proficient economists.
PEO-4: Inculcate national ethos and values in the ignited minds to serve the community on economic or policy issues.

B. Program Outcomes for BA Economics & BA Economics (Honours)

PROGRAM OUTCOMES (PO'S)

PO-1: To provide students with a strong foundation in economic theories, concepts, and models.

PO-2: Gain knowledge of economics for insight into current economic scenarios' complexities, dynamics and challenges.

PO-3: Equip students in methodology related to Research and Statistics.

PO-4: Comprehend the empirical applications using relevant quantitative techniques to support contemporary economic arguments.

PO-5: Apply an analytical framework for economic enquiry and decision-making by appropriately considering social and environmental welfare.

PROGRAM SPECIFIC OUTCOMES (PSO'S)

PSO-1: Accomplish a deep understanding of core economic principles to relate to various real-world issues.

PSO-2: Develop analytical aptitude with modern quantitative tools necessary to understand the economic arguments.

PSO-3: Instill lifelong learning skills for policy modelling and analysis of factual issues of the economy.

Articulation Matrix (mapping is labelled as strongly with 3, moderately with 2 or low with 1)

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PSO-1**	**PSO-2**	**PSO-3**
PEO-1	3	3	3	3	3	3	3	3
PEO-2	3	3	3	3	3	3	3	3
PEO-3	3	3	2	2	3	3	2	3
PEO-4	2	2	2	3	3	2	3	3

SEMESTER AND CHOICE BASED CREDIT SYSTEM

Credit based system of study and student's performance/progress is measured by the number of credits that he/she has earned, i.e. completed satisfactorily. Based on the course credits and grade obtained by the student, grade point average is calculated.

a. Course credits assignment

Each course has a certain number of credits assigned to it depending upon its duration in periods for lecture, tutorial and practical/field practice in a week. A few courses/activities may have without credit(s) and are referred to as Audit Pass courses, which are mandatory to pass as a partial fulfillment of award of the degree.

b. Earning of credits

At the end of every course, a grade shall be awarded in each course for which a student has registered. On obtaining a minimum Pass-grade, students shall accumulate the course credits as Earned Credits. A student's performance shall be measured by the number of credits that he/she has earned and by the weighted grade point average. Grades obtained in the audit courses shall not be counted for computation of grade point average, however shall be mandatory to pass as a partial fulfillment of award of degree.

For Award of Degree of the programme B.A. (H) in Economics, he/she has to earn a minimum 140 credits during the 3- year duration of the programme in 6 semesters.

The total credits required to be earned have been further classified under two baskets of courses: 'Compulsory Courses' and 'Elective Courses'. Total 108 credits required to be earned under Compulsory Courses basket and 32 credits under Elective Courses basket.

Compulsory Courses baskets are required to be qualified and cleared/pass by students enrolled under the program, and the same are semester-wise listed in the study scheme along with credits assigned to each course.

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Under Elective Courses Basket, there will be three types of courses:

- Semester-wise Discipline-specific/Inter-disciplinary/Generic courses offered by the department itself.·
- Open/inter-disciplinary courses offered at the level of Institute/University, and notified from the office of Dean- Academics.
- Massive Open Online Courses (MOOCs) available on SWAYAM platform or any other platform as recommended by UGC/AICTE and notified from the office of Dean-Academics.

Each course shall have credits assigned to it. Student shall be required to register courses every semester for as many courses/credits specified under Elective Courses basket depending upon his/her interest, capability/pace of learning and availability of time slot (without any clash in

time table) so as to earn all required total credits under the Elective Courses basket during the entire program duration.

However, for registration of courses [including courses under Compulsory Courses basket, Elective Courses basket and Previous Semester Courses (wherein he/she was declared in-eligible on the basis of attendance or he/she could not clear the course within permissible given chances), if any, the maximum limit in a semester shall be 30 credits.

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Semester I

Course Type	Course Code	Course Title	Marks			Credits
			Internal Assessment	End Semester Examination	Total	
Foundation	O4.5SET100C04	Environmental Studies	30	70	100	4
Core	O4.5ECO101C01	Introductory Microeconomics	30	70	100	4
Core	O4.5ECO102C01	Statistical Methods in Economics - I	30	70	100	4
Ability Enhancement	O 4.5FLFR100E04/ O 4.5FLGR100E04/ O 4.5FLSP100E04	Foreign Language-I (French/ German/Spanish)	30	70	100	3
Ability Enhancement	O4.5SBSS100C04	Indian Knowledge System	30	70	100	2
2 Skill Enhancement	O4.5CDC186C05	Professional Communication-I	30	70	100	1
	O4.5ECO111C01	Introduction to Data	30	70	100	2
Total			**210**	**490**	**700**	**20**

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Semester II

Course Type	Course Code	Course Title	Marks			Credits
			Internal Assessment	End Semester Examination	Total	
Core	O4.5ECO201C01	Introduction to Macroeconomics	30	70	100	4
Core	O4.5ECO202C01	Mathematical Economics - I	30	70	100	4
Core	O4.5ECO203C01	Statistical Methods in Economics – II	30	70	100	4
Ability Enhancement	O4. FL5FLFR200E04 / O4.5GR200E04/ O4.5FLSP200E04	Foreign Language-II (French/ German/Spanish)	30	70	100	3
Skill Enhancement	O4.5CDC271C05	Professional Communication-II	30	70	100	1
	TOTAL COMPULSORY CREDITS					**16**
Generic Elective	O4.5ECO204E03	Government & Politics in India	30	70	100	3
Total			**180**	**420**	**600**	**19**

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Semester III

Course Type	Course Code	Course Title	Marks			Credits
			Internal Assessment	End Semester Examination	Total	
Core	O5.0ECO101C01	Intermediate Microeconomics	30	70	100	4
Core	O5.0ECO102C01	Intermediate Macroeconomics	30	70	100	4
Core	O5.0ECO103C01	Mathematical Economics - II	30	70	100	4
2 Ability Enhancement	O5.0ECO151C04	Data Analysis and visualization using Excel and SPSS	30	70	100	2
	O5.0SBSS100C04	Universal Human Values	30	70	100	2
Skill Enhancement	O5.0CDC171C05	Professional Competency Enhancement-I	30	70	100	1
CDC (ANY ONE)	O5.0ECO152C06	Internship	100		100	2
	O5.0ECO153C06	Field Visit				
	TOTAL COMPULSORY CREDITS					**19**
Discipline Elective	O5.0ECO104E02	Agriculture Economics	30	70	100	3
Generic Elective (ANY ONE)	O5.0ECO105E03	Financial Accounting in India	30	70	100	3
	O5.0ECO106E03	Indian Economy I	30	70	100	
Total			**300**	**7000**	**1000**	**25**

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Semester IV

Course Type	Course Code	Course Title	Marks			Credits
			Internal Assessment	End Semester Examination	Total	
Core	O5.0ECO201C01	International Economics - I	30	70	100	4
Core	O5.0ECO202C01	Economic Growth and Development	30	70	100	4
Core	O5.0ECO203C01	Public Economics	30	70	100	4
Ability Enhancement (Any 1)	O5.0ECO204C04	Quantitative and Logical Reasoning	30	70	100	2
	O5.0ECO251C04	Data Analysis and visualization using R and Python	30	70	100	
Audit Pass	O5.0SAHS100C09	Sports and Yoga	100		100	0
Skill Enhancement	O5.0CDC271C05	Placement Preparatory Programme	30	70	100	1
	TOTAL COMPULSORY CREDITS					**15**
Discipline Elective	O5.0ECO205E02	History of Economic Thought	30	70	100	3
Generic Elective	O5.0ECO206E03	Indian Economy II	30	70	100	3
Total			**270**	**630**	**700**	**21**

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Semester V

Course Type	Course Code	Course Title	Marks			Credits
			Internal Assessment	End Semester Examination	Total	
Core	O5.5ECO101C01	International Economics - II	30	70	100	4
Core	O5.5ECO102C01	Development Economics	30	70	100	4
CDC (Chose any 1)	O5.5ECO151C06	Industry Training	100		100	2
	O5.5ECO152C06	Community Connect				
	TOTAL COMPULSORY CREDITS					**10**
2 Discipline Elective	O5.5ECO153E02	Data Analysis through - Statistical Software - STATA	30	70	100	3
	O5.5ECO103E02	Research Methodology	30	70	100	3
Generic Elective	O5.5ECO104E03	Understanding Sustainable Development Goals	30	70	100	3
Total			**180**	**420**	**600**	**19**

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Semester VI

Course Type	Course Code	Course Title	Marks			Credits
			Internal Assessment	End Semester Examination	Total	
Core	O5.5ECO201C01	Basic Econometrics	30	70	100	4
Core	O5.5ECO202C01	Monetary Economics	30	70	100	4
2 Discipline Elective	O5.5ECO203E02	Comparative Economic Development	30	70	100	3
	O5.5ECO204E02	Environment & Resource Economics	30	70	100	3
Term Paper#	O5.5ECO251E08	Term Paper	100		100	6
Generic Elective	O5.5ECO205E03	Economics of Education	30	70	100	3
Total			**180**	**420**	**600**	**17**

SEMESTER I

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ENVIRONMENTAL STUDIES

COURSE CODE: O4.5SET100C04

Periods/week. Credits	Maximum marks: 100
3+1*	Continuous Assessment: 30
Duration of examination: 3Hrs	End Semester Examination: 70
Pre-requisites: NIL	
Course Type: Compulsory Courses	

Course Outcomes

After completion of this course, the students will be able to:

O4.5SET100C04.1. appreciate the historical context of human interactions with the environment.
O4.5SET100C04.2. understand the concept of natural resources and explain sustainable development, its goals, targets, challenges and global strategies for sustainable development.
O4.5SET100C04.3. develop a critical understanding of the environmental issues, pollution and its types.
O4.5SET100C04.4. understand the concepts of ecosystems, biodiversity and conservation.
O4.5SET100C04.5. gain a comprehensive knowledge of climate change, its science and response measures.
O4.5SET100C04.6. develop a critical understanding of the complexity of environmental management and learn about how the nations of the world work together for the environment.

PART- A

Unit 1: Humans and the Environment

1.1 The man-environment interaction, Great ancient civilizations and the environment; Industrial revolution and its impact on the environment; Population growth and natural resource exploitation.
1.2 Environmental Ethics and emergence of environmentalism.

Unit 2: Natural Resources and Sustainable Development

2.1 Overview and classification of natural resources
2.2 Biotic resources
2.3 Soil and mineral resources
2.4 Energy resources
2.5 Introduction to sustainable development: Sustainable Development Goals (SDGs)- targets and indicators, challenges and strategies for SDGs.

Unit 3: Environmental Issues

3.1 Local, Regional and Global level environmental issues.
3.2 Land use and Land cover change: land degradation, deforestation, desertification, urbanization. Biodiversity loss: past and current trends, impact.
3.3 Ozone layer depletion; Climate change. Disasters – Natural and Man-made (Anthropogenic).

Unit 4: Conservation of Biodiversity and Ecosystems

4.1Biodiversity and its distribution: Biodiversity as a natural resource; Levels and types of biodiversity; Biodiversity in India and the world; Biodiversity hotspots; Species and ecosystem threat categories.
4.2 Ecosystems and ecosystem services

4.3 Threats to biodiversity and ecosystems
4.4 Major conservation policies

PART-B

Unit 5: Environmental Pollution and Health

5.1Understanding pollution: Production processes and generation of wastes; Assimilative capacity of the environment; Definition of pollution; Point sources and non-point sources of pollution.

5.2 Air pollution: Sources of air pollution; Primary and secondary pollutants; Indoor air pollution; Adverse health impacts of air pollutants; National Ambient Air Quality Standards.

5.3Water pollution: Sources of water pollution; River, lake and marine pollution, groundwater pollution; water quality Water quality parameters and standards; adverse health impacts of water pollution on human and aquatic life.

5.4Soil pollution and solid waste: Soil pollutants and their sources; Solid and hazardous waste; Impact on human health.

5.5Noise pollution: Definition of noise; Unit of measurement of noise pollution; Sources of noise pollution; Noise standards; adverse impacts of noise on human health.

5.6Thermal and Radioactive pollution: Sources and impact on human health and ecosystems.

Unit 6: Climate Change: Impacts, Adaptation and Mitigation

6.1Understanding climate change

6.2 Impacts, vulnerability and adaptation to climate change

6.3Mitigation of climate change: Synergies between adaptation and mitigation measures; Green House Gas (GHG) reduction vs. sink enhancement

Unit 7: Environmental Management

7.1Introduction to environmental laws and regulation

7.2Environmental management system: ISO 14001 Concept of Circular Economy, Life cycle analysis; Cost-benefit analysis

7.3 Environmental audit and impact assessment; Environmental risk assessment Pollution control and management; Waste Management- Concept of 3R (Reduce, Recycle and Reuse) and sustainability; Ecolabeling /Ecomark scheme

Unit 8: Environmental Treaties and Legislation

8.1An overview of instruments of international cooperation; bilateral and multilateral agreements; conventions and protocols

8.2 Major International Environmental Agreements

8.3Major Indian Environmental Legislations:

8.4Major International organizations and initiatives

Case Studies and Field work*

The students are expected to be engaged in some of the following or similar identified activities: • Discussion on one national and one international case study related to the environment and sustainable development.

• Field visits to identify local/regional environmental issues, make observations including data collection and prepare a brief report.

• Participation in plantation drive and nature camps.

• Documentation of campus biodiversity.

• Campus environmental management activities such as solid waste disposal, water Management and sanitation, and sewage treatment.

List of Suggested Textbooks/Reference Books:

1. Fisher, Michael H. (2018) An Environmental History of India- From Earliest Times to the Twenty-First Century, Cambridge University Press.
2. Headrick, Daniel R. (2020) Humans versus Nature- A Global Environmental History, Oxford University Press.
3. Hughes, J. Donald (2009) An Environmental History of the World- Humankind's Changing Role in the Community of Life, 2nd Edition. Routledge.
4. Perman, R., Ma, Y., McGilvray, J., and Common, M. (2003) Natural Resource and Environmental Economics. Pearson Education.
5. Simmons, I. G. (2008) Global Environmental History: 10,000 BC to AD 2000. Edinburgh University Press.
6. Chiras, D. D and Reganold, J. P. (2010) Natural Resource Conservation: Management for a Sustainable Future.10th edition, Upper Saddle River, N. J. Benjamin/Cummins/Pearson.
7. John W. Twidell and Anthony D. (2015) Renewable Energy Sources, 3rd Edition, Weir Publisher (ELBS)
8. William P.Cunningham and Mary A. (2015) Cunningham Environmental Science: A Global Concern, Publisher (Mc-Graw Hill, USA)
9. Manahan, S.E. (2022). Environmental Chemistry (11th ed.). CRC Press. https://doi. org/10.1201/9781003096238
10.Varghese, Anita, Oommen, Meera Anna, Paul, Mridula Mary, Nath, Snehlata (Editors) (2022) Conservation through Sustainable Use: Lessons from India. Routledge.
11.Ahluwalia, V. K. (2015). Environmental Pollution, and Health. The Energy and Resources Institute (TERI).
12.Adenle A., Azadi H., Arbiol J. (2015) Global assessment of technological innovation for climate change adaptation and mitigation in developing world, Journal of Environmental Management, 161 (15): 261-275.
13.Richard A. Marcantonio, Marc Lame (2022) Environmental Management: Concepts and Practical Skills. Cambridge University Press.
14.Kanchi Kohli and Manju Menon (2021) Development of Environment Laws in India, Cambridge University Press.

Evaluation Tools:

Assignment/Tutorials | Sessional tests | Surprise questions during lectures/Class Performance | End Semester Examination

Instructions for paper setting:

Seven questions are to be set in total. First question will be conceptual covering entire syllabus and will be compulsory to attempt. Three questions will be set from each Part A and Part B (one from each unit). Learner needs to attempt two questions out of three from each part. Each question will be of 14 marks.

Evaluation Policy:

The evaluation will include two types of assessments:
Continuous or formative assessments (in the form of end semester examination or term examination.
Weightage of assessments are as follows:

For continuous or Formative assessment (in semester): Maximum 30 percent. The categorization is:
MCQs 30%
Subjective (Short/Long) 40%
Discussion/Presentation 15%
Projects/Group Activities etc 15%

For Summative assessment (End Semester Examination or End-Term Examination): Minimum: 70 percent. Categorization for the same is:
Objective Type Questions: 30%
Short/Long Questions: 70%
Course Articulation Matrix

CO Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PSO-1	PSO-2	PSO-3
O4.5SET100C04.1	3	1	1	3	3	3	3	1
O4.5SET100C04.2	3	1	1	3	2	3	2	1
O4.5SET100C04.3	3	2	1	3	3	3	2	1
O4.5SET100C04.4	3	2	1	3	3	3	3	1
O4.5SET100C04.5								
O4.5SET100C04.6								

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INTRODUCTORY MICROECONOMICS
COURSE CODE: O4.5ECO101C01

Periods/week. Credits 4
Maximum marks: 100
Continuous Assessment: 30
End Semester Examination: 70
Duration of examination: 3Hrs
Pre-requisites: NIL
Course Type: Compulsory Courses

Course Outcomes

After completion of this course, the students will be able to:

O4.5ECO101C01.1: Understand how scarcity, opportunity costs and cost/benefit analysis impact economic behaviour.

O4.5ECO101C01.2: Interpret consumer behaviour theory in detail.

O4.5ECO101C01.3: Infer behaviour of firm in the theory of production, cost and revenue.

O4.5ECO101C01.4: Understand the impact of monopolies versus competitive equilibrium on economic outcomes.

Part-A

Unit-1: Introduction

1.1. Principles of Economics
1.2. Economic problem: - Scarcity and Choice
1.3. Central Problems of the economy, Positive and Normative Analysis
1.4. Production Possibility Curve: - Definition, Properties, Rotation and shifts of PPC

Unit-2: Consumer's Behaviour

2.1. Consumer's equilibrium – Cardinal Approach (Meaning of utility, Law of diminishing marginal utility, Conditions of consumer's equilibrium using marginal utility analysis.)
2.2. Consumer's equilibrium – Ordinal Approach (Indifference Curve and its properties, Budget Line, Conditions of Consumer's equilibrium).
2.3. Derivation of Demand Curve through Cardinal and Ordinal Preferences.

Part-B

Unit-3: Production and Cost

3.1. Production Function in traditional theory.
3.2. Law of Variable Proportions: Derivation of short run total, Average and Marginal products
3.3. Short run Cost: Total fixed cost, Total variable cost, Total cost, Average fixed cost, Average variable cost, Average total cost, and Marginal cost
3.4. Costs of production as Derived functions

Unit 4: Market Structure

4.1. Market structure and Classifications: - Perfect Competition, Monopoly, Monopolistic Competition, Oligopoly
4.2. Effects of shift in Demand and Supply in Perfect and Imperfect competition
4.3. Price-Output determination under Perfect Competition
4.4. Price-Output determination under Monopoly

List of Suggested Textbooks/Reference Books:

- Mankiw, N.G. (2015) Principles of Microeconomics. Stanford, CT: Cengage Learning.
- Varian, H.R. (2020) Intermediate microeconomics: A modern approach. New York: W.W. Norton and Company.
- Pindyck, R.S. and Rubinfeld, D.L. (2005) Microeconomics. Upper Saddle River, NJ: Pearson Prentice Hall.
- Frank, R.H. (2020) Microeconomics and behaviour. New York, NY: McGraw-Hill Education.

Evaluation Tools:
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Instructions for paper setting:
Seven questions are to be set in total. First question will be conceptual covering entire syllabus and will be compulsory to attempt. Three questions will be set from each Part A and Part B (one from each unit). Learner needs to attempt two questions out of three from each part. Each question will be of 14 marks.

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Course Articulation Matrix

CO Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PSO-1	PSO-2	PSO-3
O4.5ECO101C01.1	3	1	1	3	3	3	3	1
O4.5ECO101C01.2	3	1	1	3	2	3	2	1
O4.5ECO101C01.3	3	2	1	3	3	3	2	1
O4.5ECO101C01.4	3	2	1	3	3	3	3	1

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STATISTICAL METHODS IN ECONOMICS-I
COURSE CODE: O4.5ECO102C01

Periods/week Credits 4
Maximum marks: 100
Continuous Assessment: 30
Duration of examination: 3Hrs
End Semester Examination: 70
Pre-requisites: NIL
Course Type: Compulsory Courses

Course Outcomes

After completion of this course, the students will be able to:
O4.5ECO102C01.1: Apply Statistical Concepts, Techniques, and Methodologies to Real-World Data Sets
O4.5ECO102C01.2: Enhance Critical Thinking and Problem-Solving Abilities Through the Application of Statistical Techniques
O4.5ECO102C01.3:Develop Effective Communication Skills, to Present Statistical Findings and Interpretations
O4.5ECO102C01.4: Development of a Curious and Analytical Mindset for Further Studies or Professional Applications in Fields requiring Statistical Analysis.

Part - A

Unit 1: Central Tendency

1.1. Basic Concepts of Statistics: Types of Data, Variables: Qualitative and Quantitative.
1.2. Introduction to Data Distribution and its Properties
1.3. Characteristics of a Good Measure of Central Tendency
1.4. Relationship Between Mean, Median, and Mode
1.5. Positional Averages: Quartiles, Deciles, and Percentiles.

Unit 2: Dispersion

2.1. Measures of Dispersion: Range, Interquartile Range, Variance, Standard Deviation, Mean Deviation, and Quartile Deviation
2.2. Range-Based Measures of Dispersion: Mean Deviation, Coefficient of Variation, and Interquartile Range
2.3. Empirical Rule and its Application in Estimating Data Proportions using the Normal Distribution.

Unit 3: Moments, Skewness, and Kurtosis

3.1. Moment Generating Function: Understanding Moments about Arbitrary Origin, Raw Moments, and Central Moments
3.2. Skewness: Measurement using Absolute and Relative Measures
3.3. Kurtosis: Understanding its Measurement and Implications

Part - B

Unit 4: Bivariate Analysis

4.1. Analysis of Bivariate Data: Scatter Diagram and Graphical Representation
4.2. Exploring Correlation: Karl Pearson Correlation, Coefficient of Correlation, and Probable Error
4.3. Understanding the Coefficient of Determination, Spearman's Rank Correlation, and Basics of Partial and Total Correlations.
4.4. Overview of Regression, Relation Between Correlation and Regression Coefficient

Unit 5: Index Number

5.1. Importance of Constructing Index Numbers: Price Index Versus Value Index
5.2. Comparative Analysis of Index Number Construction Methods: Fisher, Laspeyres, And Paasche Methods
5.3. Consistency Tests for Index Numbers: Time Reversal, Factor Reversal, and Circular Test
5.4. Addressing Problems Associated with Index Numbers, Including a Comparison with Implicit Price Deflators.

List of Suggested Textbooks/Reference Books:

- Jay L. Devore (2012) *Probability and Statistics for Engineering and the Sciences*, 8th Edition, Cengage Learning
- David Anderson, Dennis Sweeney, Thomas Williams (2010) Statistics for Business and Economics, 11th Edition, Cengage Learning
- Merchant, R. *et al.* (1998) *Applied Statistics for business and economics, third edition, Allen L. Webster*. Boston: Irwin/McGraw-Hill.
- Spiegel, M.R., Schiller, J.J. and Srinivasan, R.A. (2013) *Probability and statistics*. New York: Schaum.
- Paul, H. *et al.* (2016) *Statistics for Economics: Compiled from statistics for Business and Economics, Eighth Edition, Global edition, Paul Newbold, William L. Carlson and Betty M. Thorne*. Harlow: Pearson.
- Keller, G. (2023) *Statistics for Management and Economics*. Boston, MA: Cengage.
- Levine, D., Szabat, K. and Stephan, D. (2020) *Business statistics: A first course*. Hoboken, NJ: Pearson.
- Agresti, A., Franklin, C.A. and Klingenberg, B. (2023) *Statistics: The art and science of learning from Data*. Harlow: Pearson.

Evaluation Tools:

Assignment/Tutorials | Sessional tests | Surprise questions during lectures/Class Performance | End Semester Examination

Instructions for paper setting:

Seven questions are to be set in total. First question will be conceptual covering entire syllabus and will be compulsory to attempt. Three questions will be set from each Part A and Part B (one from each unit). Learner needs to attempt two questions out of three from each part. Each question will be of 14 marks.

Evaluation Policy:

The evaluation will include two types of assessments:
Continuous or formative assessments (in the form of end semester examination or term examination.
Weightage of assessments are as follows:

For continuous or Formative assessment (in semester): Maximum 30 percent. The categorization is:
MCQs 30%
Subjective (Short/Long) 40%
Discussion/Presentation 15%
Projects/Group Activities etc 15%

For Summative assessment (End Semester Examination or End-Term Examination): Minimum: 70 percent. Categorization for the same is:
Objective Type Questions: 30%
Short/Long Questions: 70%
Course Articulation Matrix

Course Articulation Matrix

CO Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PSO-1	PSO-2	PSO-3
O4.5ECO102C01.1			3	2			2	
O4.5ECO102C01.2			3	2			2	
O4.5ECO102C01.3			3	3			1	
O4.5ECO102C01.4	1		2	2			1	

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INTRODUCTION TO DATA
COURSE CODE: O4.5ECO111C01

Periods/week Credits
2
Duration of examination:3Hrs
Pre-requisites: NIL
Course Type: Compulsory Courses

Maximum marks: 100
Continuous Assessment: 30
End Semester Examination: 70

Course Outcomes

After completion of this course, the students will be able to:
O4.5ECO111C01.1: Gain Knowledge of Different Types of Data
O4.5ECO111C01.2: Organize and Arrange Data Based on Specific Needs
O4.5ECO111C01.3: Use Excel for Basic Data Visualization
O4.5ECO111C01.4: Prepare Descriptive Statistics Table of Variables

Part-A

Unit-1: Types of Data

1.1. Definition of Data, Types of Data: Qualitative and Quantitative, Levels of Measurement: Nominal, Ordinal, Interval, and Ratio
1.2. Data Sources: Primary and Secondary; Data Collection Methods: Surveys and Questionnaires, Observations, Experiments, Case Studies

Unit-2: Organize and Arrange Data

2.1. Data Organization, Data Cleaning, Data Transformation
2.2. Sorting and Filtering Data, Grouping and Ungrouping Data

Part-B

Unit-3: Excel for Basic Data Visualization

3.1. Basics of Excel: Cells, Rows, Columns, and Worksheets, Data Entry in Excel
3.2. Creating Charts and Graphs, Customizing Charts and Graphs, Bar Plot, Pie Plot

Unit 4: Descriptive Statistics

4.1. Measures of Central Tendency: Mean, Median, Mode
4.2. Measures of Dispersion: Range, Variance, Standard Deviation

List of Suggested Textbooks/Reference Books:

- Maheshwari, A. (2024). Data analytics made accessible. Seattle: Amazon Digital Services.
- Mize, E. (2019). Data Analytics: The Ultimate Beginner's Guide to Data Analytics. Venture Ink.
- Guerrero, H., Guerrero, R., & Rauscher. (2019). Excel data analysis. Springer International Publishing.
- Gupta, S. P., & Gupta, M. P. (2009). Business statistics. Sultan Chand & Sons, New Delhi.

Evaluation Tools:

Assignment/Tutorials | Sessional tests | Surprise questions during lectures/Class Performance | End Semester Examination

Instructions for paper setting:
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Course Articulation Matrix

Course Articulation Matrix

CO Statements	PO-1	PO-2	PO-3	PO-4	PO- 5	PSO-1	PSO-2	PSO-3
O4.5ECO111C01.1		3	3		2		3	1
O4.5ECO111C01.2		3	3		2		3	1
O4.5ECO111C01.3		3	1		2		3	1
O4.5ECO111C01.4	3	3	1	3	3	3	3	2

INDIAN KNOWLEDGE SYSTEM
COURSE CODE: O4.5SBSS100C04

Periods/week Credits	Maximum marks: 100
2	Continuous Assessment: 30
Duration of examination: 2Hrs	End Semester Examination: 70
Pre-requisites: NIL	
Course Type: Compulsory	
Courses	

Course Outcomes

After completion of this course, the students will be able to:

O4.5SBSS100C04.1: This course will provide the scientific value of the traditional knowledge of Bhārata.

O4.5SBSS100C04.2: To sensitize the students to the contributions made by ancient Indians schools.

O4.5SBSS100C04.3: The course will promote the youths to do research in the various fields of Bhāratīya knowledge system.

O4.5SBSS100C04.4: It will introduce the relevance of the Indian Knowledge System to the world.

O4.5SBSS100C04.5: Know the contribution of the Indian Knowledge system in science, engineering, and technology.

Module 1: Introduction to IKS

1.1. What is Indian Knowledge System
1.2. Indian Culture & Civilization
1.3. Indian Architecture
1.4. Indian Philosophical System

Module 2: Kalas and Vidyas of Ancient India

2.1. 64 Kalas
2.2. 14 Vidyas (Vedas, UpaVedas, Vedangas)

.

Module 3: Introduction to Health Regimen

3.1. Understanding Swastha vritta
3.2. Healthy regimen to maintain state of wellbeing Dinacharya
3.3. Daily regimen including Daily detoxification, exercise, Intake of Food, Water, Air and Sunlight, work and ergonomics, Rest and sleep hygiene
3.4. Ritu charya, the seasonal regimen
3.5. Sadvritta and the concept of social wellbeing
3.6. Concept of Shadrasa in choosing appropriate nourishment to the body and mind.

Module 4: Introduction to Indian Psychology

4.1. Concept of Manas in Ayurveda and understanding Mind Body harmony
4.2. Triguna based Psychology in Ayurveda and Yoga
4.3. Influence of Tri dosha on Mind, Mind body intellect and consciousness complex
4.4. Understanding Consciousness and solution to issues within Human Mind

Module 5: Engineering, Technology and Architecture

5.1. Pre-Harappan and Sindhu Valley Civilization
5.2. Laboratory and Apparatus, Juices, Dyes
5.3. Paints and Cements
5.4. Glass and Pottery

List of Suggested Textbooks/Reference Books

- Mahadevan, B., Bhat Vinayak Rajat, Nagendra Pavana R.N. (2022), "Introduction to Indian Knowledge System: Concepts and Applications", PHI Learning Private Ltd. Delhi.
- Pride of India: A Glimpse into India's Scientific Heritage, Samskrita Bharati, New Delhi.
- Sampad and Vijay (2011). "The Wonder that is Sanskrit", Sri Aurobindo Society, Puducherry.
- Acarya, P.K. (1996). Indian Architecture, Munshiram Manoharlal Publishers, New Delhi.
- Kapoor Kapil, Singh Avadhesh (2021). "Indian Knowledge Systems Vol – I & II", Indian Institute of Advanced Study, Shimla, H.P.
- Dasgupta,S. (1975). A History of Indian Philosophy- Volume 1, Motilal Banarsidass, New Delhi.
- P Lofker, K. (1963). Mathematics in India, Princeton University Press, New Jeresy, USA"

Evaluation Tools:

Assignment/Tutorials | Sessional tests | Surprise questions during lectures/Class Performance | End Semester Examination

Instructions for paper setting:

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Short/Long Questions: 70%

Course Articulation Matrix

CO Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PSO-1	PSO-2	PSO-3
O4.5SBSS100C04.1	3	3	3		3	3		3
O4.5SBSS100C04.2	3		2	3		3	3	3
O4.5SBSS100C04.3		3	2	3	2	3	3	2
O4.5SBSS100C04.4	3	2	2		3	3	3	2
O4.5SBSS100C04.5	2			3	2	2	2	3

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O4.5FLGR100E04: GERMAN – I

Credits	Max. Marks: 100
3	Internal/Continuous Assessment: 30
Duration of Examination: 2 Hrs	End Semester Exams : 70

Course Outcomes:
O4.5FLGR100E04.1. Students will be able to exchange greetings and introductions using formal and informal expressions. They will be able to ask and answer simple questions.

O4.5FLGR100E04.2. Students will be able to speak ordinal and cardinal numbers and they will also learn months, Days, weather in German.

O4.5FLGR100E04.3. will be able to discuss everyday life and daily routines, using simple sentences and familiar vocabulary. Students will be able to write short essays on family and friends. They will have knowledge of tenses.

O4.5FLGR100E04.4. Students will be able to express or/and justify opinions using equivalents of different verbs. Students will be able to identify key details in short, highly-contextualized audio text dealing with a familiar topic, relying on repetition and extra linguistic support when needed.

O4.5FLGR100E04.5. Students will be able to differentiate certain patterns of behavior in the cultures of the German- speaking world and the student's native culture. Students will be able to discuss everyday life and daily routines, using simple sentences and familiar vocabulary.

O4.5FLGR100E04.6. Students will be able to describe various places, location, themselves using simple sentences and vocabulary.

PART-A

Unit-1: Begrüßungen und sich vorstellen
1.1 Salutations/Greetings
1.2 Introduction
1.3 Alphabets
1.4 countries & languages

Unit-2: Zahlen /Zeit und Monate
2.1 Numbers 1-20
2.2 Ordinal & Cardinal numbers
2.3 Months, days, seasons, Feiertage and dates

Unit-3: Pronomen
3.1 Personal pronouns
3.2 Possessive pronouns
3.3 Hobbies and professions
3.4 Vocabulary (Family, colors,adjectives) short essay on family, friends, hobbies etc.

PART-B

Unit-4: kasus
4.1 kasus- nominative / accusative
4.2 Common verbs and their conjugations
4.3 Definite and indefinite articles
4.4 Revision

Unit-5: im Café
5.1 Café related vocabulary and dialogues
5.2 modal verbs and their conjugations
5.3 Revision

Unit-6: im klassenimmer
6.1 Time
6.2 prepositions-um/am/von…. bis/im
6.3 Vocabulary (classroom)

Text Books/Reference Books:

1. Studio D A1, Hermann Funk, Cornelson Publication
2. TangaramAktuell A1, Kursbuch&Arbeitsbuch, Hueber
3. Netzwerk, Stefanie Dengler, Paul Rusch et. Al, Klett

Evaluation Tools:
Assignment/Tutorials | Sessional tests | Surprise questions during lectures/Class Performance | End Semester Examination

Instructions for paper setting:
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Subjective (Short/Long) 40%

Discussion/Presentation 15%
Projects/Group Activities etc 15%
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percent. Categorization for the same is:
Objective Type Questions: 30%
Short/Long Questions: 70%

Course Articulation Matrix

CO STATEMENT (Write Course Code)	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
O4.5FLGR100E04.1	-	-	3	-	2	1
O4.5FLGR100E04.2	1	-	3	-	2	-
O4.5FLGR100E04.3	-	-	3	-	2	1
O4.5FLGR100E04.4	-	1	3	-	2	-
O4.5FLGR100E04.5	-	1	3	-	2	-
O4.5FLGR100E04.6	-	1	3	-	-	1

Weblinks:
http://www.nthuleen.com/

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Subject Code:- O4.5CDC186C05
Professional Communication-I
(Semester – 1)

Credits
1

Max. Marks: 100
Internal/Continuous Assessment: 30
End Semester Exams : 70

Course Outcomes: The students will be able to:

O4.5CDC186C05.1: develop all-round personality by mastering interpersonal skills.
O4.5CDC186C05.2: enhance their communication competence.
O4.5CDC186C05.3: apply effective listening and speaking skills.

Unit 1

Attitudinal Communication

1.1 Attitude and its Impact on Communication
1.2 Courtesy & Politeness in Communication
1.3 Diversity & Inclusion – Bullying, Cultural Sensitivity, Stereotypes, Sexual Harassment, LGBTQ, Respect, Chivalry, Racial & Gender Discrimination, Disability Harassment, Inclusion.

Unit 2

Syntactical Communication - I

2.1 Common errors in communication
2.2 Identification of word class
2.3 Errors & rectifications in
2.3.1 Article usage
2.3.2.Tenses usage - Present Perfect vs. Past Simple vs. Past Perfect
2.3.3 Subject Verb Agreement

Unit 3

Phonetics

3.1 Impact of First Language Influence
3.2 Tone
3.3 Intonation
3.4 Rate of Speech
3.5 Pronunciation: Vowels & Consonant sounds

Unit 4

Developing Communication Skills -I (Listening & Speaking)

4.1 Concept of LSRW: Importance of LSRW in communication.
4.2 Listening Skills : Types of listening, Real Life challenges, Barriers to Listening
4.3 Speaking : Self Introduction, Extempore

Recommended Texts and Readings:

1. Diversity and Inclusion: The Big Six Formula for Success by D.A. Abrams
2. Wren and Martin English Grammar and Composition, S. Chand & Company Pvt. Ltd.
3. Word Power Made Easy by Norman Lewis, Penguin Random House Pvt. Ltd.
4. Soft Skills for the Rigid Worker by Chris Estrada
5 . Mastering Soft Skills by Julian Vyner

Evaluation Tools:

Assignment/Tutorials | Sessional tests | Surprise questions during lectures/Class Performance | End Semester Examination

Instructions for paper setting:

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Objective Type Questions: 30%
Short/Long Questions: 70%

CO-PO mapping for BA Economics

Course Outcome	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PSO-1	PSO-2	PSO-3
O4.5CDC186 C05.1	-	-	**2**	**2**	-	-	-	-	-
O4.5CDC186 C05.2	-	-	**2**	**2**	-	-	-	-	-

O4.5CDC186 C05.3	**-**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**

SEMESTER -II

Manav Rachna International Institute of Research and Studies (MRIIRS)
(Deemed to be University under Section 3 of the UGC Act 1956)
INTRODUCTION TO MACROECONOMICS
COURSE CODE: O4.5ECO201C01

Periods/week	Credits	Maximum marks: 100
L:3 T:1 P:0	4	Continuous Assessment: 30
Duration of examination: 3Hrs		End Semester Examination:70

Pre-requisites: NIL
Course Type: Compulsory Courses

Course Outcomes
After completion of this course, the students will be able to:
4.5ECO201C01.1: Describe the Circular Flow of Income and the Process of Income Multipliers that Influence these Flows.
4.5ECO201C01.2: Define Key Macroeconomic Aggregates like Gross Domestic Product, National Income and Inflation.
4.5ECO201C01.3: Identify the Determinants of Various Macroeconomic Aggregates and the Major Challenges Associated with the Measurement of these Aggregates.
4.5ECO201C01.4: Construct the Aggregate Demand and Aggregate Supply Model of the Macro Economy and use it to Illustrate Macroeconomic Problems and Potential Monetary and Fiscal Policy Solutions.

Part-A

Unit-1: Introduction to Basic Concepts of Macro Economics

1.1. Meaning of Macro Economics, Importance of Macroeconomics and Central Issues in Macroeconomics
1.2. Circular Flow of Income in a Two, Three and Four Sector Economy.
1.3. Various Concepts of National Income, GDP and Personal Income, Nominal and Real GDP, Various Approaches to Measurement of National Income
1.4. Difficulties in Measurement of National Income and GDP as an Indicator af Social Welfare.

Unit-2: The Classical Theory of Income and Employment

2.1. The Classical Full Employment Model: Say's Law of Market, Wage-Price Flexibility and Full Employment.
2.2. Determination of Equilibrium Employment and Output in the Short Run without and with Saving and Investment
2.3. Difference between Real and Money Wage, Demand and Supply Curve of Labour and Labour Market Equilibrium
2.4. Classical Theory of Employment and Output- Complete Classical Model.
2.5. Neutrality of Money and Classical Dichotomy

Part-B

Unit-3: The Keynesian Theory of Income and Employment

3.1. Keynesian Aggregate Demand and Supply Curves using Consumption and Investment Curve (Graphically And Numerically)
3.2. Determination of Equilibrium Level of Output and Employment: Aggregate Demand-Supply Equilibrium and Saving and Investment Approach.
3.3. Keynesian Multiplier: Concept, Types of Multipliers in Case of Lumpsum and per unit Tax
3.4. Investment Multiplier, Government Expenditure Multiplier, Tax Multiplier, Leakages of Multiplier.

Unit 4: Macroeconomic Policy Challenges

4.1. Inflation Types: Demand-Pull and Cost-Push Inflation.
4.2. Unemployment Concepts: Types of Unemployment, Natural Rate
4.3. Monetary Policy and Inflation: Central Bank actions to Control Inflation/Deflation.
4.4. Fiscal Policy and Economic Stabilization: Using Government Spending and Taxation.

List of Suggested Textbooks/Reference Books:

- Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
- N. Gregory Mankiw, Macroeconomics, Worth Publishers, 7th edition, 2010.
- Richard T. Froyen, Macroeconomics, Pearson Education Asia, 2nd edition, 2005.
- N. Mankiw and D. Romer (1991), ed., New Keynesian Economics, MIT,2 Volumes. Selected Readings.
- Paul R. Krugman, Maurice Obstfeld and Marc Melitz, International Economics, Pearson Education Asia, 9th edition, 2012.
- Blanchard Olivier: Macroeconomics, Pearson Education
- W. H. Branson. Macroeconomics, Harper & Row INC USA, Indian Edition
- D.N. Dwivedi, Macro Economics: Theory & Policy, Tata Mcgraw Hill

Evaluation Tools:

Assignment/Tutorials | Sessional tests | Surprise questions during lectures/Class Performance | End Semester Examination

Instructions for paper setting:

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Course Articulation Matrix

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4.5ECO201C01.1	3	2			2	3	3	3
4.5ECO201C01.2	3	3		2		3		2
4.5ECO201C01.3	3		3	2		3	2	2
4.5ECO201C01.4	3	3	2	3	2	3	3	3

Manav Rachna International Institute of Research and Studies (MRIIRS)
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MATHEMATICAL ECONOMICS-I
COURSE CODE: O4.5ECO202C01

Periods/week Credits Maximum marks:100
L:3 T:1 P:0 4 Continuous Assessment:30
Duration of examination: 3Hrs End Semester Examination:70
Pre-requisites:
Course Type: Compulsory Courses

Course Outcomes
After completion of this course, the students will be able to:
O4.5ECO202C01.1: Explain Economic Theories with the use of Matrix Algebra.
O4.5ECO202C01.2: Solve the Linear Equation System.
O4.5ECO202C01.3:Apply Mathematics for Economic Modelling.
O4.5ECO202C01.4: Use Calculus and Integral Calculus to Solve Economic Theories.

Part-A

Unit-1: Introduction to Matrix Algebra
1.1 Concept of Space, Scalar Versus Vector, Row/Column Vectors and their Operations
1.2 Different Types of Matrices: Square Matrix, Diagonal Matrix, Identity Matrix, Null Matrix, Scalar Matrix
1.3 Matrix Operations: Addition and Multiplication.

Unit-2: Solving Linear Equations
2.1. Linear Equations System in Matrix Notation and Role of the Inverse Matrix
2.2. Basics of Determinant and its Solution: Minor/Cofactor and Adjoint
2.3. Inverse of a Matrix and Solution of the Linear System including Cramer's Rule.

Part-B

Unit-3: Partial and Total Derivative
3.1. Techniques of Partial Differentiation
3.2. Second-Order Partial Derivative
3.3 Rules of Total Differential; Derivative of Implicit Function

Unit 4: Basics of Integral Calculus
4.1 Nature of Integral and Area Under the Curve
4.2 Integration by Parts; Definite Integral: Properties
4.3 Determination of Area; Indefinite and Improper

List of Suggested Textbooks/Reference Books:

- Chiang, A. C. (1984). Fundamental methods of mathematical economics. MacGraw-Hill. International (3rd Edition).
- Sydsaeter, K., & Hammond, P. J. (2008). Essential mathematics for economic analysis. Pearson Education.
- Allen, R. G. D. (1956). Mathematical analysis for economists.

Evaluation Tools:
Assignment/Tutorials | Sessional tests | Surprise questions during lectures/Class Performance | End Semester Examination

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Short/Long Questions: 70%
Course Articulation Matrix

Course Articulation Matrix

CO Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PSO-1	PSO-2	PSO-3
O4.5ECO202C01.1	3	2	2		1			3	
O4.5ECO202C01.2	3	2							
O4.5ECO202C01.3	3	3	2	1		2		3	
O4.5ECO202C01.4	3	2	2	1		2		2	

Manav Rachna International Institute Of Research And Studies (MRIIRS)
(Deemed to be University under Section 3 of the UGC Act 1956)
STATISTICAL METHODS IN ECONOMICS-II
COURSE CODE: O4.5ECO203C01

Periods/week	Credits	Maximum marks:100
L:3 T:1 P:0	4	Continuous Assessment:30
Duration of examination: 3Hrs		End Semester Examination:70

Pre-requisites: Statistical Methods in Economics-I
Course Type: Compulsory Courses

Course Outcomes

After completion of this course, the students will be able to:
O4.5ECO203C01.1: Apply Statistical Concepts, Techniques, and Methodologies to Real-World Data Sets
O4.5ECO203C01.2: Enhance Critical Thinking and Problem-Solving Abilities through the Application of Statistical Techniques
O4.5ECO203C01.3: Develop Effective Communication Skills, to Present Statistical Findings and Interpretations
O4.5ECO203C01.4: Development of a Curious and Analytical Mindset for Further Studies or Professional Applications in Fields Requiring Statistical Analysis

Part-A

Unit 1: Introduction to Statistics and Probability

1.1. Basic Concepts of Statistics: Populations, and Samples.
1.2. Introduction to Probability: Events, Outcomes, Sample Spaces.
1.3. Probability Rules: Addition Rule, Multiplication Rule, Complement Rule.
1.4. Conditional Probability and Bayes' Theorem.
1.5. Counting Principles: Permutations and Combinations.

Unit 2: Probability Distributions

2.1. Discrete Probability Distributions: Bernoulli, Binomial, and Poisson Distributions.
2.2. Continuous Probability Distributions: Uniform, Normal, Exponential, and Gamma Distributions.
2.3. Properties of Probability Distributions: Mean, Variance, and Moment Generating Functions.
2.4. Central Limit Theorem and its Significance.

Unit 3: Sampling and Estimation

3.1. Sampling Techniques: Random Sampling, Stratified Sampling, and Cluster Sampling.
3.2. Sampling Distributions: Sampling Distribution of Sample Means and Sample Proportion.
3.3. Point Estimation: Unbiasedness, Efficiency, and Consistency.
3.4. Confidence Intervals: Construction and Interpretation.
3.5. Sample Size Determination for Estimation.

Part-B

Unit 4: Hypothesis Testing

4.1. Introduction to Hypothesis Testing: Null and Alternative Hypotheses.
4.2. Test Statistics and P-Values.
4.3. Type I and Type II Errors, Significance Level, and Power of a Test.
4.4. One-Sample Tests for Means and Proportions.

4.5. Two-Sample Tests for Means and Proportions.
4.6. Goodness-Of-Fit Tests and Tests for Independence.

Unit 5: Analysis of Variance (ANOVA)
5.1. Introduction to ANOVA: One-Way And Two-Way ANOVA
5.2. ANOVA Assumptions: Normality, Equal Variances, And Independence.
5.3. One-way ANOVA: Sum of Squares, Mean Squares, F-Test, And Post-hoc Tests.
5.4. Two-way ANOVA: Main Effects and Interaction Effects.

List of Suggested Textbooks/Reference Books:

- Jay L. Devore (2012) *Probability and Statistics for Engineering and the Sciences*, 8th Edition, Cengage Learning
- David Anderson, Dennis Sweeney, Thomas Williams (2010) Statistics for Business and Economics, 11th Edition, Cengage Learning
- Goon A.M., Gupta M.K. and Dasgupta B. (2002): Fundamentals of Statistics, Vol. I & II, 8th Edn. The World Press, Kolkata
- Miller, Irwin and Miller, Marylees (2006): John E. Freund's Mathematical Statistics with Applications, (7th Edn.), Pearson Education, Asia
- Spiegel, M.R., Schiller, J.J. and Srinivasan, R.A. (2013) *Probability and statistics*. New York: Schaum.
- Gupta, S.P. (2021) *Statistical Methods.* S. Chand and Sons
- Merchant, R. *et al.* (1998) *Applied Statistics for business and economics, third edition, Allen L. Webster*. Boston: Irwin/McGraw-Hill.

Evaluation Tools:
Assignment/Tutorials | Sessional tests | Surprise questions during lectures/Class Performance | End Semester Examination

Instructions for paper setting:
Seven questions are to be set in total. First question will be conceptual covering entire syllabus and will be compulsory to attempt. Three questions will be set from each Part A and Part B (one from each unit). Learner needs to attempt two questions out of three from each part. Each question will be of 14 marks.

Evaluation Policy:
The evaluation will include two types of assessments:
Continuous or formative assessments (in the form of end semester examination or term examination. Weightage of assessments are as follows:

For continuous or Formative assessment (in semester): Maximum 30 percent. The categorization is:
MCQs 30%
Subjective (Short/Long) 40%
Discussion/Presentation 15%
Projects/Group Activities etc 15%

For Summative assessment (End Semester Examination or End-Term Examination): Minimum: 70 percent. Categorization for the same is:
Objective Type Questions: 30%
Short/Long Questions: 70%
Course Articulation Matrix

Assessment Tools

Continuous assessment:

Class assignments and/or tutorials (20%)
Sessional tests (30% + 30%)
Surprise test/Class performance (10%)
Class Attendance (10%)

Course Articulation Matrix

CO Statements	PO-1	PO-2	PO-3	PO-4	PO-5	PSO-1	PSO-2	PSO-3
O4.5ECO203C01.1	3		2	1		1	2	
O4.5ECO203C01.2	3	2	2	1	2	3	2	2
O4.5ECO203C01.3		3	2		2	3	2	2
O4.5ECO203C01.4	1		1		1	2	1	2

O4.5FLGR200E04: GERMAN – II

Periods/week Credits
L: 3 T: 0 3
Duration of Examination: 3 Hrs

Max. Marks: 100
Internal/Continuous Assessment:30
End Semester Exam : 70

Course Outcomes:

O4.5FLGR200E04.1 Students will be able to understand difference between the cases and apply the same while formulating sentences.

O4.5FLGR200E04.2 Students will be able to write short essays on familiar topics. They will have knowledge of Tenses.

O4.5FLGR200E04.3 Students will be able to make indirect questions using appropriate pronouns and cases.

O4.5FLGR200E04.4 Students will be able to describe either daily routine using equivalents of different verbs. They will be able to make request or order someone using appropriate grammar constructs.

O4.5FLGR200E04.5 Students will be able to identify home vocabulary in the German language & describe their home.

O4.5FLGR200E04.6 Students will be able to give reasons or justification by using conjunctions and connectors.

PART – A

Unit 1 Accusative **(8 Lectures)**

1.1 Accusative mit personal pronoun
1.2 Accusativ mit Possesive pronoun
1.3 Revision
1.4 Ja/nein frage

Unit 2 Tenses **(8 Lectures)**

2.1 Präteritum mit sein
2.2 Präteritum mit haben
2.3 Nicht oder Kein

Unit 3 Kasus **(7 Lectures)**

3.1 Introduction to Dativ
3.2 Artikel im Dativ

PART – B

Unit 4 trennbaren verben **(7 Lectures)**

4.1 Separable verbs

4.2 non-Separable verbs
4.3 Imperativ

Unit 5 wohnung **(7 Lectures)**
5.1 Wohnung vokabular
5.2 Wohnung beschreibung
5.3 Revision

Unit 6 Konjunktion **(7 Lectures)**

6.1 Co-ordinting
6.2 Subordinting
6.3 Revision

Text Books/Reference Books:

1. Rita Maria Niemann, Cornelsen,, Studio d A1: Deutsch als Fremdsprache, Volume 6

2. Dallapiazza, Rosa-Maria and Jan, Eduard von. Tangram aktuell 1. Deutsch als Fremdsprache Tangram aktuell 1 - Lektion 1-4: Deutsch als. (Hueber Verlag).

3. Dallapiazza, Rosa-Maria and Jan, Eduard von. Tangram aktuell 1. Deutsch als Fremdsprache Tangram aktuell 1 - Lektion 5-8: Deutsch als. (Hueber Verlag)

4. Paul Rusch,: Langenscheidt and Klett

Instructions for paper setting: The paper shall be divided in four Sections-
Section-A Reading, Section-B-Writing , Section-C Grammar and Section D- Culture and Civilization.

Course Articulation Matrix

CO STATEMENT (Write Course Code)	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
O4.5FLGR200E04.1	-	-	3	-	2	1
O4.5FLGR200E04.2	1	-	3	-	2	-
O4.5FLGR200E04.3	-	-	3	-	2	1
O4.5FLGR200E04.4	-	1	3	-	2	-
O4.5FLGR200E04.5	-	1	3	-	2	-
O4.5FLGR200E04.6	-	1	3	-	-	1

Weblinks:
http://www.nthuleen.com/

Evaluation Tools:
Assignment/Tutorials | Sessional tests | Surprise questions during lectures/Class Performance | End Semester Examination

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Assessment Tools

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